Mechanisms of Human Disease
The Skin
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Learning Objectives

• Be aware ABCDE’s

• Be aware of basic dermatologic diagnostic tests

• Begin to generate a differential diagnosis

Case 1
• 19 year old female presents with 3 week history of a rash. Slightly itchy, some bleeding where she scratches. No pain.
• PMH: Onychomycosis
• PSH: None
• Meds: None
• All: None
• Family history: no family history of similar rash

Differential

• Melanocytic nevus
• Congenital melanocytic nevus
• Solar lentigo
• Seborrheic keratosis
• Melanoma

Melanocytic Nevus

[Image of a melanocytic nevus]
Congenital Melanocytic Nevus

Solar Lentigo

Seborrheic Keratosis
Melanoma

A = Asymmetry
One half is unlike the other half.

B = Border
An irregular, scalloped or poorly defined border.

C = Color
To vary from one area to another. Has shades of tan, brown, or black, or is sometimes white, red, or blue.

D = Diameter
Melanomas are usually greater than 6 mm (the size of a pencil eraser) when diagnosed, but they can be smaller.

E = Evolution
A mole or skin lesion that looks different from the rest or is changing in size, shape or color.


What would you do next?

- A) Biopsy
- B) Monitor in 3 months
- C) Take a culture
- D) KOH scraping
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Skin Biopsy

Pathology Report

- Superficial spreading melanoma, Breslow depth 0.54 mm, 0 mitosis
What next?

NCCN Guidelines for Melanoma

Case 2

Conway DG, Lyon RF, Heiner JD. Ann Emerg Med 2013

Conway DG, Lyon RF, Heiner JD. Ann Emerg Med 2013
Case 2

A 4 year old boy presents with two day history of worsening eruption, skin is now tender.
PMH: No history of hospitalization
PSH: None
Meds: None
Allergies: None
Social History: Lives at home with mom, dad, 7 year old brother

Differential?

• Linear IgA Bullous Dermatosis
• Pemphigus Vulgaris
• Dermatitis Herpetiformis
• Stevens Johnson Syndrome
• Herpes Simplex Virus
• Varicella zoster

Linear IgA Bullous Dermatosis

• Chronic Bullous Disease of Childhood
  – Crown of Jewels/string of pears/annular rosette
  – Mucous membranes involved 75% of cases
• Adult disease
  – Idiopathic
  – Drug induced
  – Mucous membranes involved in 50% of cases

**Pemphigus Vulgaris**

- Flaccid bullae
- Autoantibodies against desmoglein 1 and desmoglein 3
- +Nikolsky sign
- +Asboe Hansen sign
- Life threatening

![Image of Pemphigus Vulgaris](image)


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**Dermatitis Herpetiformis**

- Papules, vesicles, or bullae on a red base
- Extensor surfaces, scalp, nuchal area, buttocks
- IgA in the dermal papillae
- May be associated with celiac disease

![Image of Dermatitis Herpetiformis](image)


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**Stevens Johnson Syndrome**

- Fever and influenza like symptoms
- <10% BSA sloughs
- Mucous membranes involved
- Often drug induce (in kids: mycoplasma induced)

![Image of Stevens Johnson Syndrome](image)

Herpes Simplex

- Herpes Labialis
- Gingivostomatitis
- Herpetic Whitlow
- Eczema Herpeticum
- Genital HSV
- Disseminated disease in infants

Varicella

- Dewdrops on a rose petal
- Lesions in various stages
- Most common complication?
  - Secondary infection w S. Aureus or Strep

Staph Scalded Skin Syndrome
SSSS

Exfoliate toxin A
Active serine protease
Culture mucous membranes

Case 3
Case 3

- 43 year old woman with 3 week history of slightly pruritic rash. Still getting new spots. No pain, no fevers.
- PMH: None
- PSH: None
- Meds: None
- All: None
- Soc: Lives with her 2 children; smokes; occasional alcohol
Differential

- Psoriasis
- Atopic Eczema
- Tinea Corporis
- Pityriasis Rosea
- Discoid Lupus

Psoriasis

- Annular variant
- Thick silvery / white scale
- Auspitz sign
- Context clues: gluteal cleft, nails, scalp, conchal bowls
- Koebner phenomenon

Atopic Dermatitis

- ~ 20% of children in the US
- Chronic
- Associated with seasonal allergies, asthma, eczema in families (“atopy”)
Tinea Corporis

- Dermatophyte infection
  - T. Rubrum, M. Canis, T. Mentagrophytes
- May be pruritic
- Leading edge of scale

Discoid Lupus Erythematosus

- Larger % of kids than adults go on to have LSE
- Can scar
- Scaling, follicular plugging

Pityriasis Rosea

- HHV 6 / 7
- Herald patch
- Follows skin tension lines
- 3-8 weeks, self resolving
Case 4

A 56 year old man presents to the clinic with 2 day history of worsening rash. It’s a bit itchy. Denies skin pain, painful urination, or pain in eyes/mouth. Has not tried any treatment. He has longstanding history of hypertension and takes lisinopril. One week ago he started taking Bactrim for a skin infection.

PMH: HTN
PSH: Cholecystectomy
Meds: Lisinopril
All: None

Differential?

- Urticaria
- Viral exanthem
- Cellulitis
- Erythema Nodosum
Urticaria

- Lesions last < 24 hours
- Pruritic
- Inquire re: facial edema
- Acute Urticaria < 6 weeks
- Chronic Urticaria > 6 weeks
- Infection, Drugs, Food

Viral Exanthem

- Difficult to distinguish from drug exanthem
- Children > adults
- Extremities > trunk
**Erythema Nodosum**

- Tender indurated subcutaneous nodules
- Pretibial area, lateral shins
- Septal panniculitis
  - Infection
  - Strep
- Drugs
  - OCP’s
  - Echinacea
  - Inflammatory


**Cellulitis**

- Warm, pink red, tender
- +/- fever, leukocytosis
- Staph aureus (MSSA, MRSA)
- Strep


**Morbilliform Drug Exanthem**

- Begin proximally (axillae, groin) and generalize
- Trunk > extremities
- Within first 2 weeks of treatment
  - Antibiotics most common
- Always consider drug hypersensitivity

American Academy of Dermatology
Case 5

• 6 week old infant (twin) girl presented to clinic for red plaque behind her left ear. It was noted around 2 weeks of age and has grown since. No pain or bleeding
• PMH: Twin, born at 34 weeks, 4 pounds 1 oz
• PSH: None
• Meds: None
• All: None
• Soc: Lives at home with siblings and parents, does not attend daycare / babysitter

Differential

• Pyogenic granuloma
• Kaposi’s Sarcoma
• Cherry Angioma
• Infantile Hemangioma
Pyogenic Granuloma

- Friable surface, bleeds
- Nontender
- Spontaneous
- Remove for histologic diagnosis
  - Differential includes Spitz nevus, amelanotic melanoma, etc

Kaposi’s Sarcoma

- Classic
  - Toes, plantar feet, face (including oral mucosa)
- African Cutaneous
  - Aggressive
- African Lymphadenopathic
  - Aggressive and fatal, children < 10 years
- AIDS-associated
  - Head, neck, trunk, mucous membranes
- Immunocompromised
- HHV-8

Cherry Angioma

- Round, slightly elevated ruby red papule
- Most common vascular lesion
Infantile Hemangioma

- 6-10% of infants
- Epidemiologic factors
- Natural history
- Small but substantial portion are complicated and require work up and treatment
- They “go away” – but will they leave a mark?

Thank you

- Questions?
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